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## NORMAN C. FASSETT
## 1900—1954

by

**John W. Thomson (Madison, Wisc.)**

Stimulating and energetic in personality, Norman C. Fassett was one of the leaders in taxonomic thought in North America. With his many travels and frequent attendance at scientific meetings he had many friends and an influence far beyond that of just his published papers. His career is that of a man dedicated to an understanding of plants in the field.

Norman Fassett was born in Ware, Massachusetts, March 27, 1900. Although not born to a professional botanical family, he early showed his deep and abiding interest in plants, tramping in the fields and woods and along the shores of New England. His love of the Maine coast led him to work on the aquatic and semi-aquatic plants of the estuaries of New England as a special problem following his course work at Harvard University. Later, this problem became the PhD thesis which he produced under the guidance of M. L. Fernald. This early start brought him a life-long interest in a taxonomic field in which he became a recognized authority. Although he carried out many other studies during his professional life, his papers on the aquatic plants appeared at frequent intervals. From his first paper upon the estuaries, followed by many lesser papers on aquatics, through his magnificent Manual of Aquatic Plants, published in 1940, and the series of monographs upon Bidens, Callitriche, Cabomba, Ceratophyllum, Proserpinaca, his contributions on aquatic plants continued to his posthumous monograph on Echinodorus. The beliefs which Fassett held upon making workable keys and upon abundant illustrative materials are well shown in these, but especially in his Manual of Aquatic Plants. Here he sought to make it possible for any student, not just a professional botanist, to identify an aquatic plant even were it lacking fruit and flowers. He succeeded eminently in making the amorphous-seeming aquatics identifiable in this manual. Through his lifetime he was frequently called upon by colleagues to help with determinations. At the time when the illness which led to his death struck him, he was on an expedition to Guatemala, Honduras and Nicaragua, studying the aquatic plants of the lakes of Central America.

Upon obtaining his PhD degree at Harvard University in 1925, Norman Fassett was invited to the University of Wisconsin as an instructor in botany. Here his professional life was spent; rising to Assistant Professor in 1929, Associate Professor in 1937, and full Professor in 1944. He was also Curator of the Herbarium.

While at Wisconsin, Fassett greatly developed the field botanical subjects offered there. He initiated a number of courses dealing with his especial interests. First came a course called Flora of Wisconsin and its Conservation. Modeled after a course of Fernald's, this dealt with the migrations and geography of North American plants, annual trips not only in Wisconsin but as far as Kentucky, and a liberal inculcation of philosophy and ethics. The course was a very popular and influential one. Other courses on aquatic plants, grasses, and advanced taxonomy were founded and have trained many students. Fassett's influence also was important in initiating ecological work at the University of Wisconsin.

Always a man whose enthusiasm for botany and the out of doors was contagious, he helped found an undergraduate major in the biological aspects of conservation at the University of Wisconsin and he was active in the establishment of the University Arboretum. This latter, unique among arboreta in that it attempts to not only assemble groups of plants but to recreate whole ecological associations of plants, is becoming influential in the new pattern of preserves and arboreta in the United States. Fassett also was the leader of the movement to preserve natural areas in Wisconsin for scientific study and was chairman of the Natural Areas Committee which set aside the first of the Scientific Areas.

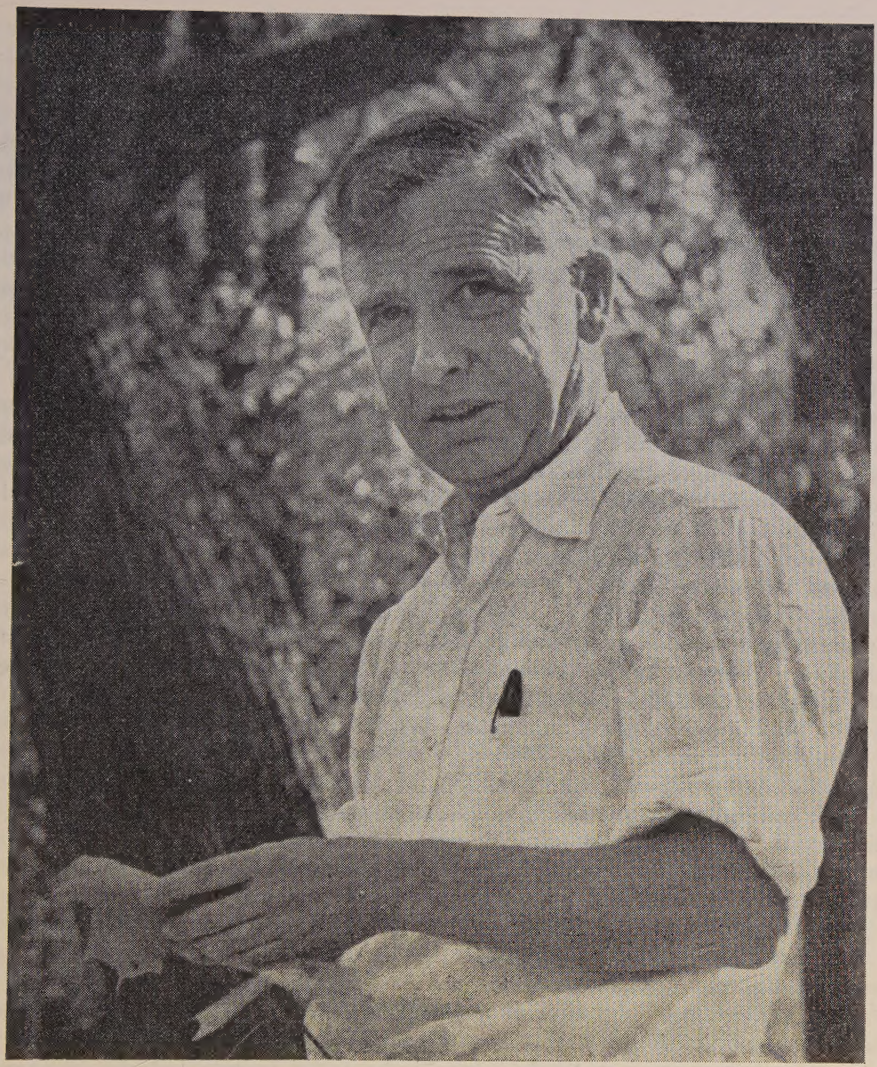
His vision and sensitive nature made him a leader in conservation thought in Wisconsin. His attitudes and effervescence of ideas spread into many departments of the University and far beyond the University through his students and colleagues. Indeed, the writer believes that Fassett introduced many botanical ideas to Aldo Leopold whose influence is so strong in the stream of American conservation thought.

While at Madison, Fassett became interested in Edgar Anderson's studies of variations in plants and the principles which could be deduced from them. Early field work and correspondence with Anderson concerning variations led Fassett to develop his own techniques. He became one of the leading exponents of "mass collections" as a technique of studying plant populations. In this, a selection of a small part of the plant representing the desired diagnostic technical characters is taken from a large number of individual plants in a population and compared for studies of the variation. Using this technique, Fassett produced papers upon Rubus odoratus and R. parviflorus, Diervilla lonicera, Ranunculus abortivus, Oxalis violacea, Linaria on the Gulf coast, Equisetum sylvaticum, Dodecatheon, a series of papers on Juniperus virginianum, J. horizontalis and J. scopulorum, Polygonum punctatum, a paper with Barbara Calhoun on Typha angustifolia and T. latifolia, and a paper with Jonathan Sauer on Phytolacca.

In addition to the previously mentioned book on aquatic plants, Norman Fassett wrote books on the Spring Flora of Wisconsin, 1931 and several later editions, Hayfever Plants of the Middlewest (with McGary and Bates), 1938, Leguminous Plants of Wisconsin, 1939, Grasses of Wisconsin, 1951, and at the time of his death had in preparation a Spring Flora of New England.

Besides his influence in building field botany at the University of Wisconsin, Norman Fassett developed the Herbarium of the University as a fine research tool. From a collection of 96,000 specimens, including 15,000 specimens of Wisconsin plants, the Herbarium under his curatorship grew to the exceedingly valuable collection of 380,000 specimens, including 68,000 specimens in the Wisconsin collection. The specimens personally collected by Fassett number 28,000.

As one of the coterie of American botanists who founded the American Society of Plant Taxonomists he greatly helped in the development of his science. In this society he served as Secretary-Treasurer and Council member during its early years, and was President at the time of his death, September 14, 1954.



*Norman C. Fassett on a field trip to Grant County, Wisconsin, Autumn, 1951. Photo by Delle Natelson.*

The story of Norman Fassett as a person is told by Donald Culross Peattie in Rhodora 56 : 233-242 . 1954. It is told well. This man of sensitive nature, hidden sometimes by a defensive sharpness, with a brilliant mind and an engaging enthusiasm is gone from among us. He will be missed by his associates, but for years to come present and future botanists will benefit from his productive career.

# WALTHER GOTHAN 1879—1954

by

Rudolf Florin (Stockholm)

At the Eighth International Botanical Congress in Paris in July 1954, it was my duty to announce to my audience the sad fact that the ranks of palaeobotanists had been seriously thinned since the previous Congress in Stockholm in 1950. Tidings of another deeply regrettable loss reached me shortly after the New Year. The Nestor of German Palaeobotany and leader of the Berlin school of palaeobotanists, Professor Dr. Walther Gothan, passed away unexpectedly on December 30th, 1954, at the age of seventyfive. Half a century of important scientific work was thereby at an end.

Walther Gothan was born on August 26th, 1879, the son of a ceramist in the small town of Woldegk in Mecklenburg, North Germany. After matriculation he spent a short time at the Clausthal College of Mines (Harz), and subsequently moved to the College of Mines and the University of Berlin, where he studied Geology and Mining as well as Botany, Chemistry, and Philosophy. After having taken his doctor's degree in 1905, Dr. Gothan became lecturer at the Berlin College of Mines from 1908 to 1914, and at the Berlin College of Technology from 1914 to 1933 (from 1919 with the title of professor); he was made an honorary professor at the said University in 1927, and was appointed professor of Palaeobotany at the Humboldt University in Berlin in 1946, a post which he held until his death. During the greater part of his career (1912—1948), however, his main official position was that of a geologist to the Prussian Geological Survey ("Preussische Geologische Landesanstalt", renamed in 1934 "Amt für Bodenforschung"). After the death of Professor H. Potonié in 1913 he became keeper of its Institute for Palaeobotany (and Coal Petrography), and in 1929 he was appointed state geologist. In 1949 he established the "Arbeitsstelle für Paläobotanik und Kohlenkunde" at the Academy of Science in Berlin, an institute of which he was the director for the five last years of his life. Dr. Gothan's great scientific merit was duly recognised, and he received honours in his own country and abroad. He was awarded the Leopold-von-Buch Plaquette of the Academy of Science at Berlin in 1948 and became a member of this Academy in 1949. In 1951 he received the Brazilian Orville-Derby Medal. He was appointed an Honorary President by the Seventh and Eighth International Botanical Congresses (Stockholm 1950 and Paris 1954).

Walther Gothan had long enjoyed world-wide fame in his particular branches of science. It was Henri Potonié who at the beginning of the present century induced him to study Palaeobotany, not only its purely botanical aspects, but also its practical application to stratigraphical problems. Although his main interest centered round the floras and the stratigraphy of the German coal-bearing formations of Carboniferous age, Dr. Gothan's scientific papers, numbering over 300, also contain numerous valuable contributions to our knowledge of the morphology, anatomy, taxonomy and geographical distribution of extinct and living plants, particularly pteridophytes and gymnosperms. His doctor's thesis, entitled "Zur Anatomie lebender und fossiler Gymnospermenhölzer" (1905), just drew attention to him as a research worker. In this paper he introduced a new basis of the characterization of gymnosperm woods by microscopic features, and contributed to developing the comparative wood anatomy of the conifers into an important subject from the phylogenetic point of view. In subsequent years he successfully investigated fossil woods of several geographical regions and geological formations. Opinions differed, however, on the phylogenetic implications of certain observed structures, and conifer wood anatomy became for decades the object of debates of the first order. In a good many of his works Dr. Gothan dealt with the external morphology of fossil plants, previously

known or else discovered by him, e.g. his analyses of the morphology of fern and pteridosperm fronds and its importance to taxonomy. In other respects, too, he widened our knowledge of the Palaeozoic pteridosperms.

First and foremost, however, Walther Gothan was an eminent expert on the Carboniferous floras, their composition, relationships and geographical distribution, as well as on the application of Palaeobotany to the geology and stratigraphy of both paralic and limnic coal basins. From 1929 onwards he was at times engaged on a monographic exposition of "Die Steinkohlenfloren der westlichen paralischen Carbonreviere Deutschlands", of which work five volumes have appeared. The last of these (1953) completed the description of the so-called Pteridophylla (ferns and pteridosperms). It is to be regretted that owing to disturbances due to World War II he was not privileged to conclude this important task. In the course of years Dr. Gothan had extended his investigations to many other floras from various geological formations in Germany but also in other countries and foreign continents. Critical comparative studies on a world-wide scale of Palaeozoic and Mesozoic floras, especially of those of Permo-Carboniferous age, enabled him to widen considerably our knowledge of their stratigraphical relations and geographical distribution. In his research on the Frankish flora (1914) he was able to differentiate between Rhaetic and Lower Liassic species, and he showed that most of the flora which had been erroneously regarded as Rhaetic was, in fact, Lower Liassic. The phytogeography of the Tertiary period, and the ecology of the brown-coal flora, also attracted his attention. Dr. Gothan was moreover a diligent writer of general surveys recording the rapidly accumulating results of palaeobotanical research. Of these works, the following should be mentioned: "Leitpflanzen des Karbons und Perms" (1923), "Paläobiologische Betrachtungen über die fossile Pflanzenwelt" (1924), "Das frühere Pflanzenkleid des deutschen Bodens" (1939), and "Lehrbuch der Paläobotanik" (1921). A new edition of this text-book was published last year in collaboration with Professor H. Weyland of the University of Cologne.

Dr. Gothan was highly esteemed by his colleagues, fellow-workers and many students (both German and foreign), not only as a prominent scientist and academic teacher, but also for his humane traits, not least his readiness to encourage and support research by word and deed. Wherever he appeared, he was easily recognized by his tall stature and distinguished personality. His somewhat boisterous manners were combined with natural friendliness and geniality, and his wit and keen sense of humour never failed to charm those who met him. In his leisure hours he relieved the tension of his many duties and scientific activities by cultivating his musical interests and talents; he was himself a good player of the flute, the violin and the viola.

As lately as at the Paris Congress he was still apparently full of life, with an undiminished capacity for work. He still made his remarks in the spicy way so characteristic of him. Nobody suspected that he would soon be gone for ever. Colleagues have told me how glad they feel that they had this last opportunity of renewing their friendship with him and that they should have seen him as his vigorous and cheerful self.

Walther Gothan won the admiration and friendship of many palaeobotanists. They will retain him in grateful memory.

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# AUGUST A. PULLE
## 1878—1955

by

J. Lanjouw (Utrecht)

On the 28th of February 1955 Prof. Dr A. A. Pulle died at Utrecht after a long and painful illness.

August Adriaan Pulle was born on the 10th of January 1878 at Arnhem, where he also attended the primary and the secundary school. During the later years at the high school his interest in plants was awakened, and by numerous excursions in the neighbourhood, which is well-known for its varied vegetation, he obtained a good knowledge of the Dutch flora. However, he was at that time even more attracted by chemistry, and when he had finished the high school he thought that a university study of pharmacy would best suit his leanings. As the certificate of the type of high school he had attended gave at that time no access to the university, he had to qualify for the latter by submitting himself to a special examination in the classical languages. After a one-year preparatory course he passed this examination, and in 1897 he entered the Utrecht University as a pharmaceutical student. In 1899 he obtained the B.Sc. degree. In the meantime, however, his interest in botany was once more stirred into activity, especially by the contact with the young and enthusiastic botany professor, Dr F. A. F .C. Went, and he decided to discontinue his pharmaceutical study, and to take up botany as a major subject. To this end he had to submit himself once more to a supplementary examination, this time in botany and zoology. Shortly afterwards he became assistent to professor Went. On the 11th of September 1902 he obtained the M.Sc. degree, and a few days later he departed for Suriname to participate in the Saramacca Expedition. In 1903 he returned with a large amount of herbarium material and with a good deal of experience regarding tropical vegetation. This first confrontation with a tropical flora made a lasting impression on his mind, and henceforth the study of tropical vegetation and especially that of the flora of Suriname became his main scientific concern.

In 1906 he obtained the doctors degree — first class — with a thesis called "An enumeration of the Vascular Plants known from Suriname, together with their distribution and synonymy". This work was to become the foundation on which all subsequent study of the flora of Suriname was based.

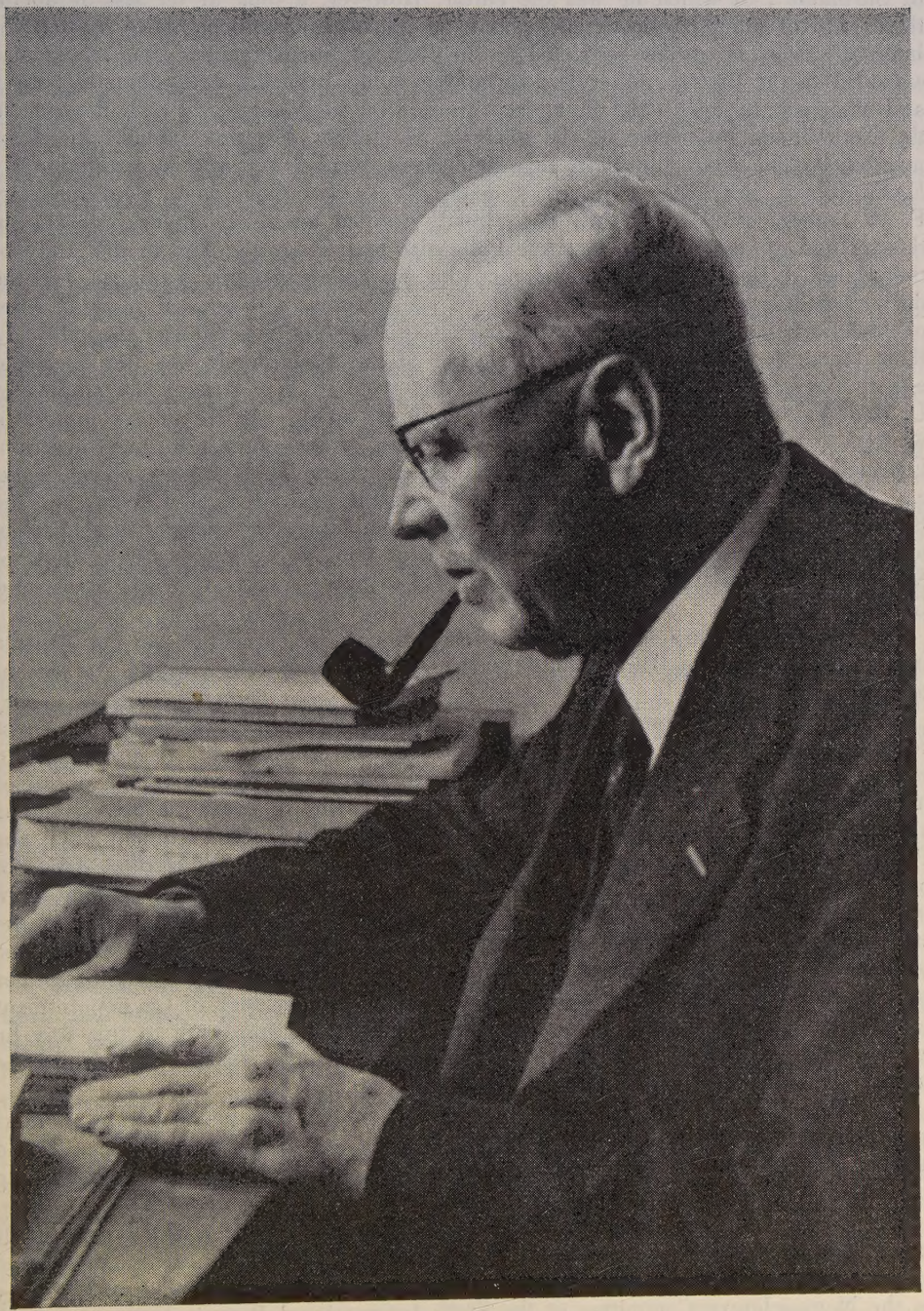
In the same year 1906 he was appointed lecturer in systematic botany and plant geography at the Utrecht University, but in order to acquaint himself by direct contact with the tropical flora of Asia he at once departed to Java. For this journey he received the stipend of the "Buitenzorg Fund".

In the years 1912 and 1913 he took part in the third expedition to South New Guinea. Very important botanical collections were brought back, and for some time afterwards he was occupied with the elaboration of part of these materials.

In 1914 followed his appointment to ordinary professor of systematic botany and plant geography at the Utrecht University. This enabled him to unfold his gifts to full extent, for now he could raise students according to his own ideas, and he could develop the Botanical Museum and Herbarium to what it has since become, i.e. to an institute that has found universal recognition.

It was a very characteristic feature of Pulle's personality that he never tried to form a school. The collaboration with his pupils nevertheless resulted in work that was highly appreciated all over the world and that brought fame to his institute.

The backbone of his reputation is doubtless formed by the long series of



*Prof. Dr A. A. Pulle, aet. 76*

publications issued by those of his pupils who occupied themselves with the study of the tropical flora. They were for a large part collected in the well-known "Flora of Suriname", of which he was the editor. However, a look at the list of doctor theses and of other publications issued from his institute will convince us that his interest was by no means restricted to the flora of Suriname, but that it was also extended to the flora of other regions and to other branches of systematic botany and plant geography. In the first place his interest in the study of peat deposits in the Netherlands by means of the analysis of pollen diagrams should here be mentioned. The first studies in this field were carried out at his instigation by F. Florschütz, and after the latter's depart to Leiden they were continued by F. P. Jonker, who in his turn has already trained several younger botanists in this method of research. At one time Pulle also took an active part in the study of the Malesian flora. The first students who worked under his guidance for the doctor's degree were H. J. Lam and D. F. van Slooten, who revised some families of Malesian plants, and some years later C. G. G. J. van Steenis was to follow in their footsteps. The study of the vegetation of the Netherlands was not neglected either, and several of his students made this their main concern. The studies of D. M. de Vries, A. Scheygrond and V. Westhoff, to quote only the more important workers in this field, are an eloquent testimony of his interest in this direction. Especially in the later part of his career he also stimulated monographical work, e.g. that of S. J. van Ooststroom on the Convolvulaceae, that of J. Swart on the Burseraceae, that of F. P. Jonker on the Burmanniaceae, and that of F. A. Stafleu on the Vochysiaceae. Doctor theses dealing with families belonging to the flora of Suriname were prepared by P. J. Eyma, J. Lanjouw, A. J. G. H. Kostermans and G. J. H. Amshoff.

The diversity of the fields in which investigations were carried out in his institute made the latter a stimulating centre in which his collaborators found it pleasant to work.

In the beginning the means he had at his disposal were very limited, but he never relaxed in his attempts to find ways and means to improve his institute and to enlarge the collections. He also did his best to find finantial support for those of his collaborators who wished to visit foreign countries in order to increase their knowledge. For most of them these visits began already in their student days, for Pulle very often made excursions with his pupils to other parts of Europe. This not only gave them some idea of the vegetation of those regions, but it also brought them in contact with foreign botanists. When in the thirties the means of most of the students were no longer sufficient to enable them to participate in such excursions, he came to their aid by creating an "Excursion Fund". The amount brought together by his pupils and friends at the occasion of the 25th anniversary of his appointment to the chair of systematic botany was donated by him to this fund. In this way he gave expression to his conviction that such excursions form an integral part of the training of systematic botanists.

Although Pulle did not take a very active part in the attempts to arrive at international botanical cooperation he showed always a very keen interest when I told him of my own efforts in that direction, and he did everything in his power to enable me to proceed with my plans.

There was, however, one field of international cooperation in which he himself was at one time actively engaged, viz. that of International Botanical Nomenclature. His interest in this subject probably reached its zenith when he acted as Recorder to the Nomenclature Committee at the Sixth International Botanical Congress held in 1935 at Amsterdam. His interest in and knowledge of nomenclature problems is clearly shown in his "Compendium van de terminologie, nomenclatuur en syste-

matiek van de Spermatophyta" (Compendium of the terminology, nomenclature and classification of the Spermatophytes). His own students were taught from the very first that accuracy in this matter is an indispensable condition for the production of useful work.

To the members of his staff and to the botanists with whom he regularly collaborated his astonishing memory was a valuable asset, for he had read much and had gathered a wide experience. He knew a large number of plants by sight, and this is doubtless a great advantage to a taxonomist. Especially his knowledge of the flora of Suriname was very extensive. His interest in this flora never relaxed, and until shortly before his death he retained an unsatiable curiosity for everything that pertained to Suriname. It was always a real treat to him when he heard that something new had been found in that country.

In his own environment as well as abroad he had made many friends. On the whole he was easy of approach; he liked a friendly chat and loved to attend a party. Generally speaking he was very fond of company. At meetings and congresses he was a wellcome visitor and collaborator, because he knew how to create a friendly atmosphere, and also because he was always willing to sacrifice his time for administrative and organisatory work. Especially the Royal Dutch Botanical Society is for his activity in her behalf greatly indebted to him.

All those who attended the International Botanical Congresses held in 1930 at Cambridge, in 1935 at Amsterdam and in 1950 at Stockholm, will remember him with friendly feelings. Of the two South American Botanical Congresses, the one held at Rio de Janeiro in 1938, of which he was an Honorary President, and that held at Tucuman in 1948, he was an active participant. From the condolatory letters we received at the occasion of his decease we learned how many friends and admirers he had found abroad.

That the Dutch phytotaxonomists and plant geographists occupy at present a prominent position in the botanical world, is to a large extent due to the activity displayed by him in the fifty years of his career. His name will for always remain connected with this period in the history of taxonomic botany, and his personal qualities will be remembered with gratitude by his many pupils and friends.

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## FIELD- AND HERBARIUM-BOTANISTS

by

A. Ducke (Fortaleza, Brazil.)

Formerly, all tropical countries were colonies of Europe, and research on their flora and fauna was made exclusively from collecting specimens for study in the mother countries. Political independence of most of Tropical America did not bring immediate economical and intellectual freedom. Until the end of the past century the rare scientific institutions of the new states kept up their colonial traditions. At present, modern methods of research prevail everywhere in Latin America, but botany is less developed than any other branch of biology. In the case of Amazonia, the principal change since the end of the colonial period was the substitution of Europe by the United States.

Many travelling botanists and zoologists have worked in the famous Amazon valley, the largest river basin in the world, and center of the hylaea, the world's greatest tropical rain forest. This privileged flora, however, is much less understood than the fauna; our knowledge of it is generally based on studies of small fragments of large forest trees and climbers, while for zoologists complete individuals are

usually available. The same conditions prevail to a certain extent in other tropical countries, but are more accentuated in Amazonia. This region is very sparsely settled, and, until recently, nearly all botanists who worked here were travelling collectors and seldom were able to gather flowers, fruits and wood samples from the same tree; on their labels, indications of ecological conditions were often lacking or incomplete. In most cases, the dried fragments were exported to countries where all native plants had been studied in the field.

Botanists can be grouped into several classes, according to the origin of their profession or the kind of their work. Some devote themselves to plants for the sheer love of them; some satisfy their vanity by placing their name next to a supposedly new binomial, and some look to botany for a salaried job. Often, at the bottom lies the passion for collecting, diverse in its aspects, finding great opportunities in the herbarium; botany, in this case, is amateur botany spiced with binomials.

Plant taxonomy, to be useful, should be based on the fusion of field work, herbarium work and bureaucratic work. Its aim is the understanding of the order which exists in the forms of plant life; its most important tool, to-day, is the binominal nomenclature.

The field botanist studies living plants and collects selected specimens; his herbarium ought to be accompanied by observations on the whole plant and its physiology, and its ecological conditions; his aim is the complete knowledge of the living plant. His work, however, must be completed by comparative studies in the herbarium.

The herbarium is indispensable chiefly for botanists working in countries still incompletely explored. Herbarium botany, however, for scientific purposes, must be supported or at least accompanied by field botany. Useful work can be done only when the herbarium studies are closely allied to field work of permanent institutions where the plants are native. The important studies of Sandwith and others, on the forest flora of British Guiana, as well as those of Pulle and his followers in Dutch Guiana, have been made feasible in this manner; field and herbarium work has improved the forest botany of both these colonies, raising it above that of the rest of the hylaea.

Herbarium botany, isolated, becomes amateur botany, often a mere hobby like that of stamp collectors, with the only difference that herbarium specimens take the place of stamps. There are 100% herbarium botanists who will study nothing but exsiccata and almost only their leaves and flowers; fruits are neglected because they are not always available in herbaria; the importance of wood structure is completely ignored. They never describe species but simply herbarium specimens they have seen, at best complete individuals, but more often mere fragments of plants. Many modern taxonomists belong to this cast, chiefly those who live in cold countries but like to write on the attractive flora of the tropics. Their monographs or revisions are no more than catalogues of herbarium samples, with the description of a single specimen ("type") for each supposed species and without any reference to the life conditions of the plants; their diagnoses are often worth less than those of the old authors, who frequently referred to several specimens of the same species. Let us cite, as a good example, Bentham's work on Leguminosae; no one who studies the Amazon flora in the field will seriously question its superiority over the recent monographic treatments. Types, in the modern sense, were unknown in the past; notwithstanding, specimens preserved in the herbaria of old authors are now often designated as types of species described by those authors, in spite of the possibility that the descriptions might not have been based on that material. This often happened with Aublet's plants, several of them having been interpreted diversely, like different solutions of difficult puzzles which each player tries to decipher in

his own way; in some cases, the same herbarium relic has been attributed to different families by different authors, in accordance with their hunch. The older the type, the higher its worth, just as in the case of any other collection of rare objects. For the pure, 100% herbarium botanists, types are idols and therefore objects of mystical worship; such idols can be complete plants but very often small fragments, as of a big tree. Several twigs from the same tree have been conservated as types of various species (this does not occur in zoology, where no ornithologist or entomologist, even the greatest splitters, have manufactured a species from a single wing or leg!). The big idols are now giving birth to as many as thirty or more secondary products, small idols somewhat like the demigods of Ancient Greece and, like these, each one with its classic name. Crosses between these can occur ("isolectotype" etc.). Many types already are fragments of individuals, and now it is becoming a fashion to divide the very fragments for use of students who cannot examine the complete type. Several modern monographs or revisions are based chiefly on such fragments of fragments, little relics extracted from the body of the idol. Such fragments, like the photos of types, often serve very well for accepting or rejecting identifications, but seldom are useful for other purposes.

The identification of certain species, in the herbarium, becomes difficult when the ecologic conditions of the plants are not mentioned. The male trees of some Amazonian *Myristicaceae* can hardly be identified without the knowledge of their habitat; certain species occur exclusively in upland forest, others in "varzea" or in "igapó". Odour and taste often help distinguish species the diversity of which is hardly perceptible in herbarium samples; certain *Aniba* (fam. *Lauraceae*) and *Guatteria* (fam. *Anonaceae*) which yield very different products have been confused by the best authors. *Strychnos parviflora* can be identified even in sterile material by the strong clovelike odour of its vegetative parts, the only known case in the genus. In zoology, the species of certain genera of *Helmintha* (for example *Schistosomum*) and *Protozoa* (e.g. *Rickettsia, Leishmannia, Trypanosoma,* etc.) are almost entirely based on non-morphological characters.

A frequent source of errors in the delimitation of species is the carelessness or ignorance in matters of phytogeography and climatology. Herbarium samples coming from the same country (in a political sense), but from regions with very different climate, are attributed to the same species because they do not diverge strongly enough in morphological characters. Such errors are made with particular frequency in Amazonian plants by herbarium taxonomists who do not understand that a tree of the equatorial rain forest can hardly be co-specific with one of the cool mountains of Southern Brazil or of the hot dry Central or Northeastern Brazil. As examples one may cite a *Licaria* from Manaus and another from Mount Itatiaia; a *Copaifera* from Belem and another from Ceará; a *Machaerium* from the Amazon and another from the dry "cerrado" of Central Mato Grosso.

A spring tide of new binomials is now rising with the introduction into systematics of anatomic characters of leaves where little differences are often used for splitting complexes hitherto considered natural genera; these differences sometimes are insignificant and may be attributed to ecological conditions and the variability in preparation of the samples. The anatomy of the wood, however, has yielded very good, constant and easily recognizable differential characters, chiefly for genera. For some authors, pollen occupies a privileged place in systematics for the establishment of genera, but this preference is only due to the abundance of flowering samples in the herbaria. In the case of certain orchids (e.g. *Laelia* and *Cattleya*), the splitting of natural genera into artificial ones, by the number of the pollinia, may originate from a commercial drive (more names for the use of amateurs!). In Bentham's opinion, genera should be based on easily recognizable characters.

Bureaucratic botany should be a tool for establishing order in scientific botany, but in many cases it degenerates into herbarium bureaucracy, becoming a source of disorder and a heavy burden for scientific work. The 100% herbarium bureaucrat is not interested in plants but only in names. He writes lists of binomials and herbarium numbers, never read by anyone except himself; he discusses the priority of these names, often with mass production of new "combinations". "Lumpers" try to reduce the excess of names, subordinating several genera or species to one only; soon, "splitters" appear and undo or modify the work of their predecessors, all, however, without any knowledge of the respective plants. Subgenera, sections and series are promoted to the rank of genera, by the splitters. The most striking example is the system of Britton and Rose which might possibly be useful for an isolated study of the North American flora but is in my opinion (and that of many others!) completely useless for the botany of Tropical America. That system has been rejected by most authors. "The maintenance of the numerous genera segregated from *Acacia* and *Mimosa* by Britton and Rose would, in the writer's opinion, serve no useful purpose. They correspond at most to sections or groups of lower rank as recognized by other authors . . . The keys are extremely difficult and the descriptions very inadequate, and it seems that these authors did not take into account the possibility of the existence of habitat and other intraspecific variations, with the result that their species may be too narrowly circumscribed". A. A. Bullock, Contributions to the Flora of Tropical America 18, Kew Bulletin 1 : 1 (1939).

"Doctor Gray once said: "Species are but judgments — judgments of variable value and often very fallible judgments". No one who has ever studied plants in the field, in the garden, or in the herbarium, will question the truth of this remark. Species are, indeed, judgments and not only that, they are matters of convenience . . . The practice of grouping a mass of distinguishable and distinct things under a single name deserves no sympathy; but, on the other hand, the habit of giving a specific name to every slight variation is equally bad. The variability of the species is, of course, much more marked in some genera than in others". Payson, Contrib. U.S. Nat. Herbarium 20 : 133.

Some herbarium bureaucrats tend to adopt the tri- or pluri-nominal nomenclature amply used in zoology (birds and butterflies, chiefly). The generalized use of this system, however is never beneficial, even in zoology. There is no advantage in giving a special name to an individual which differs from the common form in some unimportant detail. In botany, where most herbarium samples are fragments, many varieties could grow on a single tree! The variability of the species can only be studied from living plants.

The bureaucratic deterioration of clerical biology is now rapidly becoming worse. In botany as well as in zoology, chiefly in matters of economic interest, it already has become a dangerous handicap for scientific research. The idol of the mystical worship of the biological bureaucrats is Priority (of a name); their prophet, in the botanical branch, was O. Kuntze, now succeeded by many disciples. Taxonomy, influenced by a mentality frequent in our time, becomes more and more bureaucratic-totalitarian and therefore less useful for scientific purposes. This tendency becomes very evident in the replacement of names of families or subfamilies, consecrated for a hundred or more years, by recently invented ones, without any scientific purpose but only to give bureaucratic uniformity to nomenclature: for example, *Fabaceae* for *Papilionaceae*, *Asteraceae* for *Compositae*, etc. etc. "Taxonomy has grown up through the years, both in its content and in the use of its names. There is now a strong tendency to reduce it to rigid formalities and to make it inflexible; this result would be deplorable. We should be prepared to avoid fixity in the programs of life". Bailey, Gentes Herbarum VII, 2 : 163 (1946).

The worship of the idols Type and Priority is accompanied by an endless changing of binomials and a growing inflation of the nomenclature by super-production of names. The frequent substitution of universally consecrated names by new or old and forgotten ones is an important factor accelerating the already evident decadence of scientific nomenclature. This, unfortunately, has seriously injured the reputation of botany; because of this, to-day, money is not available for such magnificently illustrated monographs as those of the past century. To many, Latin nomenclature is becoming more and more ridiculous because of its misuse. Mass production has devaluated these names, as a massive issue of bank notes would reduce the value of money. The growing tide of names may some day exceed the capacity of an "Index Kewensis" and lead to the abandonment of the binominal system. — Even worse than in botany is the name-race in parasitology. Certain species have more names than a grandee of Spain: the fungus *Candida albicans* has a hundred (Brumpt, Précis de Parasitologie 6th edition p. 1608 and 1753). The common vector of the yellow fever, known throughout Brazil since the beginning of the century as *Stegomyia fasciata*, has nine scientific names; its newest in one sense and oldest in another is *Aedes aegypti*; Stegomyia is now a vernacular name.

The misuse of scientific nomenclature is indeed favouring the rise of vernacular names. Long lists of such names transcribed from herbarium sheets appear with growing frequency. They are only useful when made by responsible collectors acquainted with the country and the local people; even native collectors may accept erroneous information. Names from unreliable sources only add to the confusion so often present in scientific binomials. The vernacular names registered by foreign collectors are often false, mutilated, or corrupted, in some cases acquiring a ridiculous or obscene meaning, and more errors are introduced with the extraction of such names from the herbaria. The best way to insure the authenticity of a popular name is to ascertain its use from more than one informant, in different localities. There are regions, in Brazil, where most plants have well established names (Ceará for example), and others where the situation is very different. In Amazonia, various names originating from several aboriginal languages, or imported from Portugal or Northeastern Brazil, may refer to only one species. The latter two are often applied to plants which have but slight resemblance to the species of the country of origin.

There is, thus, an urgent need of reform of the nomenclature rules, in botany as well as in all biology, in order to avoid the continued mass productions of the fruits of vanity so incompatible with science. "La question de la nomenclature tend à devenir pour les entomologistes un obstacle toujours plus grand. Déjà au siècle dernier, on avait cherché à réagir contre les abus de nombreux systématiciens qui se figurent encore que la nomenclature est un but de science qui leur permettra de s'illustrer par l'adjonction de leur nom à telle désignation souvent douteuse ou inédite, et qui oublient que cette nomenclature n'est qu'un moyen de comprendre le classement des espèces (A. Barbey, Traité d'Entomologie Forestière à l'Usage des Sylviculteurs, p. 11-12, Paris, 1925). Much could be gained in botany by abandoning the use of the authority of the "combinations", a practice now universal in zoology. Priority should be limited and the number of "nomina conservanda" increased. It is absurd to replace a name in use for more than a century and diffused the world over, by an older but only recently exhumed and often dubious name. Only fertile samples of the species described by the old authors should be accepted as types. Species described by modern authors from sterile types should be valid only when these types show conspicuous differential characters in their vegetative parts, sufficient for identification. The type-specimens of plants too large for preservation of the complete individual should be replaced by type collections re-

presenting various parts of the plant and showing the variability. New species should be described, if possible, by the collector who should be able to supplement the morphological description with field information. No new species should be valid without reference to its place in the system and at least its affinity with some well known species of the same genus. Drawings should accompany the descriptions of the more interesting species at least, as was done in the past. All this could be accomplished by congresses of biologists. Nomenclature rules are indispensable but ought to be purged of all which leads to totalitarian uniformity, acceptable for machines but never for the study of life. "L'application trop rigoureuse des lois la nomenclature peut parfois compliquer la science au lieu d'en rendre l'étude claire et pratique. C'est pourquoi il faudrait conserver le nom des espèces quand celles-ci auront été connues pendant longtemps sous un vocable familier" (Brumpt, l.c. p. 4). "Taxonomy must be as usable, practicable and convenient as possible" (Bisby, An Introduction to the Taxonomy and Nomenclature of Fungi, Commonwealth Mycological Institute, Kew 1945). Unfortunately, certain taxonomists confuse rules of nomenclature with the immutable laws of nature and waste everybody's time and energy trying to obtain an exact interpretation of these rules, as orthodox Christians and Marxians interpret the versicles of their bibles.

## Wie sind die Herbarbelege des LINNÉ'schen Herbars in der Linnean Society in London zu interpretieren?

von

Hans Peter Fuchs (Basel)

Nachdem sich mir im Januar und Februar des vergangenen Jahres dank einer finanziellen Unterstützung der Theodor-Engelmann Stiftung in Basel die Möglichkeit geboten hatte, das Linné-sche Herbar in der Linnean Society in London zu besichtigen und die europäischen Belege der Gefässkryptogamen zu konsultieren, und da immer wieder Kritiken in Bezug auf die Linné'schen "Typen" laut werden, sei an dieser Stelle einmal die Gelegenheit wahrgenommen, die Frage der Verwendbarkeit der Linné'schen Belege in der Linnean Society in London als Typusbelege zu erörtern. Es mag mir gestattet sein, an dieser Stelle all jenen Herren, die meine Arbeit in London unterstützten, meinen herzlichsten Dank auszudrücken, so Herrn Dr G. Taylor, Herrn F. Ballard, Herrn O'Grady und nicht zuletzt meinem Freund, Herrn J. A. Crabbe.

Die relativ klare Stellungnahme durch den Int. Code (Lanjouw, Baehni & alt. 1952 : 17-18; 49-50/ 165-166; 199-200 et Schulze 1954 : 15-16; 48-49) in Beziehung auf die Frage der Typifizierung — im übrigen eine Errungenschaft, die bereits durch den Cambridger Congress 1930 in den Int. Rules (Briquet 1935 : 3-4/ 29-30/ 58) festgelegt worden war — liess die Frage und die Diskussion um die Verwendbarkeit der Linné'schen Belege in seinem Originalherbar, heute im Besitz der Linnean Society in London, (cfr. Jackson 1907, Jackson 1912 et Savage 1945), erneut in den Vordergrund treten.

Die Vorwürfe an die Linné'schen Herbarbelege in der Art, wie sie z.B. von Ascherson ex Ascherson & Graebner 1929 : 732, adnot. 2 gemacht wurden, und die Ansichten, die auch heute noch wohl die verbreitetsten und am meisten vertretenen sind, nämlich "dass Linné auf die Bezeichnungen in seinem Herbar wenig Gewicht legte und die dort niedergelegten Exemplare keineswegs als 'Originalpflanzen' oder 'Types' betrachtete" (Ascherson ex Ascherson & Graebner 1929 : 732, adnot. 2), sind nur zum kleinsten Teil berechtigt.

Wie bereits Jackson 1907 : 93 deutlich darlegte, hat nämlich Linné 1753 zwar in einer Grosszahl der Fälle die Diagnosen seinen Vorgängern — bei den Gefässkryptogamen hauptsächlich Morison 1680, Plukenet 1692, Petiver 1702, Plumier 1705, Ray 1704 und Van Royen 1740, u.a. — entnommen, gleich wie ja auch die Linné'schen Binomina in den meisten Fällen nichts anderes, als eine abgekürzte Fassung der vorlinnéischen, sehr oft C. Bauhin'schen Polynome darstellen, doch wurden die getrockneten Herbarbelege sehr oft "used to modify the diagnosis of the previosly described species" (Jackson 1907 : 93). Eine recht gute Grundlage in Beziehung auf die Frage der Interpretation Linné'scher Herbarpflanzen als Typen bildet schon der von Jackson 1912 auf Grund von Manuskriptnoten über das Linné'sche Herbar zusammengestellte Katalog und die dort zu den einzelnen Belegen aufgeführten Daten, wenn auch gesagt werden muss, dass lange nicht alle Arten, die von Jackson 1912 mit der Ziffer 1 bezeichnet wurden, d.h. die nach Jackson sich bereits 1753 im Besitze Linné's befunden haben, auch als eigentliche Typen interpretiert werden dürfen. Ich gehe durchaus mit jenen Kritikern einig, die die Linné'schen Herbarbelege nicht als Typen im eigentlichen Sinne des Wortes, d.h. als solche Pflanzen, die der respektiven Beschreibung zugrunde gelegen haben, interpretiert wissen wollen, jedoch nur insoweit, als nicht von einem Herbarbelege mit ziemlicher Eindeutigkeit nachgewiesen werden kann, dass er tatsächlich der Diagnose — oder zum mindesten der Diagnosenergänzung in Anmerkungsform — bei Linné zum Ausgangspunkt gedient hat.

Als Grundlage in der Frage und der Entscheidung, ob eigentlicher Typus oder nicht, darf prinzipiell angenommen werden, dass all jene Arten, die bei Linné 1753 mit einer der als Diagnose interpretierten Umschreibung des Taxon und dem diesbezüglichen Habitat angefügten, in Schrägschrift gesetzten Anmerkung versehen sind, als eigentliche Typen in Frage kommen können. Gleichermassen bieten auch die, ebenfalls kursiv gesetzten oekologischen Standortsumschreibungen unter dem Habitat einer Art bei Linné 1753 einen Anhaltspunkt dafür, dass Linné zum mindesten die Art — in den meisten Fällen wohl auch die bestimmte Herbarpflanze — selbst gesammelt hatte. Endlich dürfen im grossen Ganzen auch all jene Arten, bei welchen Linné 1753 einen Gewährsmann hinter der Habitatangabe vermerkt bis zu gegenteiligem Beweis als Typen im eigentlichen Sinne des Wortes interpretiert werden. Soviel nur über die Indizien, die im Hinblick auf die Typeninterpretationsfrage aus den Linné'schen Werken, speziell der ersten Auflage der Species plantarum (1753.) entnommen werden können.

Neben diesen gedruckten und einer breiteren Oeffentlichkeit zugänglichen Hinweisen bietet jedoch auch das Linné'sche Herbar selbst in Form der handschriftlichen Bemerkungen von Linné auf den respektiven Herbarbelegbogen (cfr. et Savage 1945) ein nicht zu unterschätzendes Indiz. Neben den verschiedenen symbolhaften Bezeichnungen, auf die Jackson 1912 : 19-20 ausführlich eingeht, und die zusammen mit den gedruckten Anmerkungen der Species plantarum meist recht eindeutige Beweiskraft für die Interpretation eines Linné'schen Herbarbeleges als Typus im eigentlichen Sinne des Wortes erhalten, finden sich da und dort auch tatsächliche — wenn auch sehr kurz gehaltene — Fundortsangaben oder, bei Belegen aus Herbarien der Linné'schen Zeitgenossen (vgl. die Liste der im Linné'schen Herbar vertretenen Sammler bei Jackson 1912 : 9-18), Originaletiketten. Im Hinblick auf diese von fremder Hand gesammelten Belege, vermag vor allem die recht ausgedehnte Korrespondenz, die Linné mit den andern Botanikern und Naturwissenschaftern seiner Zeit geführt hatte (cfr. e.g. Stoever 1792, J. E. Smith 1821, Van Hall 1830, Schreibers 1841 u.a.) wertvolle Hinweise über die Herkunft und die Datierung dieser Herbarpflanzen zu bieten. Immerhin mag zum Abschluss dieser

mehr allgemeinen Bemerkungen, die ich hier anschliessend noch durch einige praktische Beispiele zu illustrieren versuchen werde, darauf hingewiesen sein, dass ein Herbarbeleg in der Linné'schen Pflanzensammlung nur dann als Typ im eigentlichen Sinne des Wortes verwendet werden kann und darf, wenn es gelingt, mit grösstmöglicher Eindeutigkeit nachzuweisen, dass es sich bei dem respektiven Specimen tatsächlich um jene Pflanze handelt, auf der Linné seine Diagnose, bzw. die kursiv gesetzten kritischen Anmerkungen aufgebaut hat.

Man kann sich nun allerdings mit Recht fragen, welches Desideratum muss und darf eigentlich bei Beiziehung eines alten Herbars zu taxonomisch-nomenklatorischen Studien an die in diesen respektiven Sammlungen aufbewahrten Belege gestellt werden. — Ist es nicht ein etwas Don-Quixoteistisches Unterfangen, auf Grund nicht unschwieriger und sehr oft recht zeitraubender historischer Studien eindeutig nachweisen zu wollen, dass eine bestimmte Herbarpflanze tatsächlich einer Beschreibung zugrunde gelegen hat? — Darf man sich nicht mit Recht fragen, ob eine solche, sehr oft mühselige Sucharbeit in weit mehr historischen als rein naturwissenschaftlichen Sphären dem erhaltenen Ergebnis — eindeutiger Typus oder nicht — adäquat ist? — Es ist letzten Endes m.E. gleichgiltig, ob von einem Herbarbeleg nachgewiesen werden kann, dass er einer Beschreibung zugrunde gelegen hat, oder ob er nur von dem betr. Autor als mit seinem, eben diesem Taxon zugegebenen Binomen bzw. der zugehörigen Beschreibung identisch interpretiert wurde. Dass allerdings einem eigentlichen Typus, d.h. einem Herbarbeleg, von dem nachgewiesen werden kann, dass er der respektiven Beschreibung zugrunde gelegen hat, höhere und ausschlaggebendere Bedeutung beizumessen ist, als einem Herbarbeleg, der nur durch den respektiven Autor durch eine eigenhändige Anmerkung als mit dem von ihm publizierten Namen identisch erklärt wurde, versteht sich wohl von selbst. Trotzdem aber vermögen auch Herbarbelege, von denen zwar nicht mit Sicherheit nachgewiesen werden kann, dass sie der respektiven Beschreibung zugrunde gelegen haben, die aber immerhin vom betreffenden Autor als mit einem der von ihm beschriebenen Taxa identisch bezeichnet wurden, in ihrem Wert nicht zu unterschätzende und wertvolle Hinweise bietende Indizien abzugeben. Eingedenk dieses Nebeneinanders von verschieden hoch einzuschätzenden Herbarbelegen, die sobald sie als vom Autor eingesehen und mit einem bestimmten, von ihm beschriebenen Taxon identisch erklärt bewiesen werden können, als Typen im weiteren Sinne des Wortes aufgefasst werden dürfen, sei an dieser Stelle eine auch nomenklatorische Unterscheidung dieser Typen vorgeschlagen, in der Art, dass die eigentlichen, den respektiven Beschreibungen zugrunde gelegen habenden Herbarbelege als *Deskriptionstypen* bezeichnet werden, die andern Herbarbelege aber, von denen nur nachgewiesen werden kann, dass sie von einem Autor als mit einem der von ihm beschriebenen Taxa identisch bezeichnet wurden, als *Interpretationstypus*, wobei selbstredend einem *Deskriptionstypus* der Vorrang gegeben und weit grössere Bedeutung beigemessen werden muss, als einem *Interpretationstypus*. Gleichermassen soll ein *Interpretationstypus* nur so lange beibehalten und beigezogen werden, als kein *Deskriptionstypus* auffindbar ist. Auch beim *Interpretationstypus* kann und muss zwischen *Holotyp* und *Lectotyp* unterschieden werden, wobei es sich von selbst versteht, dass ein *Interpretationstypus* sich sehr oft auch in andern als der Originalsammlung befinden kann, und dass hauptsächlich in den alten Herbarien der prozentuale Anteil an *Interpretationstypen* weitaus höher sein kann, als derjenige der *Deskriptionstypen*.

Es mögen hier anschliessend noch, wie vorausgeschickt, einige illustrierende Beispiele zu dem eben Gesagten gegeben werden unter Bezugnahme auf Linné's Herbarium in der Linnean Society in London und die erste Auflage der Species plantarum von Linné 1753.

Da und dort, wenn auch relativ selten, geht aus den Anmerkungen zu den einzelnen Arten in Linné's Species plantarum 1753 klar hervor, dass Linné einen Herbarbeleg bei der Abfassung der als kursiv gesetzten Anmerkung gegebenen eigentlichen Diagnose vor Augen hatte. Als Beispiel sei nur *Lycopodium obscurum* L. 1753 : 1102-1103, n. 10 hier angeführt:

*obscurum* 1o. LYCOPODIUM foliis sparsis decurrentibus, sarmentis repentibus, surculis erectis dichotomis.
Lycopodioides radiatum dichotomum. *Dill. musc. 274. t. 67.*
*Habitat in* Philadelphia.
Sarmenta *erecta, dichotoma at non fastigiata: ramis lateralibus scilicet brevioribus.* Folia *sparsa attamen rariora, situ indeterminato, glabra rigidiuscula, linearia, acuta, basi decurrentia s. adnata cauli, dein patula.* Fructificatio *neque a me visa fuit.*

Der letzte im Vorstehenden wiedergegebene Satz beweist wohl zur genüge das im Obigen Gesagte, auch ohne dass man nur den betreffenden Herbarbeleg vor Augen zu haben brauchte. Gerade dieses Beispiel legt aber auch deutlich dar, dass die von Linné 1753 hinter dem Binomen gegebenen vermeintlichen Diagnosen gar keine solchen sind, sondern in der Art der Vorgänger Linné's polynomische Umschreibungen der Pflanze und erst die kursiv gesetzte Anmerkung die eigentliche Diagnose umfasst. Damit aber wird auch in Beziehung auf die von Linné beschriebenen Arten das Desideratum eines Typus im eigentlichen Sinne des Wortes, d.h. eines *Deskriptionstypus* hinfällig, und zwar überall dort, wo Linné gar keine eigentliche Beschreibung, d.h. eine als Diagnose zu interpretierende Anmerkung gegeben hat, sondern lediglich ähnlich seinen Vorgängern eine polynomische Benennung der Pflanze. Damit erhält aber auch das im Vorigen herausgestrichene Indiz der kursiv gedruckten Anmerkungen in der Species plantarum bei der Deutung einer Linné'schen Herbarpflanze erhöhte Bedeutung und vermehrte Beweiskraft.

Bei andern Arten, wie z.B. bei *Polypodium cristatum* L. 1753 : 1090, n. 36 kann mit ziemlicher Eindeutigkeit nachgewiesen werden, dass der heute im Linné'schen Herbar in der Linnean Society in London liegende Beleg den *Deskriptionstypus* darstellt. Auch hier wird der diesbezügliche Hinweis durch die kursiv gesetzte Anmerkung gegeben und zwar durch die, wie schon Newman 1844 : 210 darauf hinweist, an und für sich nichtssagenden Worte "*Florent huic foliola superiora, non inferiora*", die aber dadurch Beweiskraft erhalten, dass der einzelne im Linné-Herbar liegende und von Linné mit "36 cristatum" bezeichnete Wedel tatsächlich nur im obersten Drittel mit Soris besetzte Fiedern zeigt.

Man wird sich auf Grund einer Durchsicht der beiden Bände der ersten Auflage der Species plantarum von Linné 1753 leicht selbst davon überzeugen können, in einer welch ansehnlichen Zahl von Fällen immerhin mit grösster Wahrscheinlichkeit das Desideratum des *Deskriptionstypus* zum mindesten prinzipiell erfüllt ist, und jeder Taxonom und Systematiker wird erstaunt sein, bei wievielen Arten doch mit ziemlicher Eindeutigkeit der Nachweis gelingt, dass ein bestimmter Herbarbeleg von Linné tatsächlich einen *Deskriptionstypus* darstellt.

Immerhin bleibt noch eine grosse Zahl von Arten, bei denen der Nachweis, dass es sich bei den betr. Herbarbelegen in der Linné'schen Sammlung in der Linnean Society in London um einen *Deskriptionstypus* handelt, nicht gelingt, und die, auch wenn es wahrscheinlich ist, dass sie sich bereits 1753 im Besitze Linné's befunden haben, doch nur als *Interpretationstypen* gewertet werden dürfen. So kann ich z.B. den Typus von *Equisetum sylvaticum* L. 1753 : 1061, n. 1, der nach Jackson 1912 : 72 sich bereits 1753 in den Händen Linné's befand, nur als *Interpretationstypus* werten. Zum einen ist der aus zwei Bogen bestehende, unter n. 1241.1 & n. 1241.2

im Linné-Herbar liegende Beleg nur zum einen Teil von Linné's Hand mit "1 sylvaticum" bezeichnet, nämlich nur der Bogen n. 1241.1, auf welchem sich ein einzelner, fertiler Wedel von *Equisetum sylvaticum* L. befindet, während der zweite Bogen n. 1241.2, auf welchem zwei sterile Wedel von *Equisetum sylvaticum* L. aufgezogen sind, überhaupt jeglichen Hinweises entbehrt. (cfr. et Newman 1843 : 531). Zum andern aber vermag auch die *Equisetum sylvaticum* L. betreffende Stelle in Linné's Species plantarum ed. 1 (1753.) keinen Hinweis zu geben, der es auch nur wahrscheinlich machen würde, dass die in Frage stehenden Exsiccaten als *Deskriptionstypen* gedient hätten.

Mit diesen wenigen, als Illustration gedachten Beispielen möchte ich es in diesem Rahmen genügen lassen unter Hinweis auf meine des nächsten erscheinen sollende ausführliche Darstellung und Diskussion dieser Fragen.

Fasse ich zusammen, so lässt sich das folgende sagen:

Die Vorwürfe, die an die Linné'schen Exsiccaten in der Linnean Society in London — und gleichermassen auch an die Herbarbelege der meisten andern alten Herbare — in Beziehung auf ihre Anwendbarkeit als Typen gemacht werden, sind grösstenteils unberechtigt, wenigstens insoweit, als man, wie im Vorigen geschehen, das Wesen des Typus nicht zu eng fasst und, zwar zwischen *Deskriptionstypus* und *Interpretationstypus*, den beiden im Vorstehenden vorgeschlagenen Arten von Typen unterscheidet, aber doch beiden die Berechtigung als Typen interpretiert zu werden zugesteht. Lediglich zu einem kleinen Teil berechtigt sind sie auch dann nur, wenn man den Begriff des Typus in eingeschränktem Sinne ausschliesslich als *Deskriptionstypen* werten will, da doch bei einer Grosszahl der Linné'schen Arten — und auch Arten anderer Originalherbarien — der Nachweis gelingt, dass es sich bei den betr. Belegen tatsächlich um *Deskriptionstypen* handelt.

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# INDEX NOMINUM GENERICORUM

**Bulletin no. 2**

## *First list of collaborators*

The botanists mentioned below have promised to collaborate for the groups (or regions) indicated. From this list it will be evident that our first aim is to obtain the support of as many monographers as possible. Monographic work will be stressed in the first instance: this will avoid duplication and will enhance the intrinsic value of the Index. Negotiations with a number of other monographers are still in progress; many others will be approached in the near future.

For several of the larger groups "divisional editors" have been appointed (e.g. Algae, Lichenes, Fungi, Bryophytes, Pteridophytes, Monocotyledones, Orchidaceae, Compositae, etc.). These divisional editors will be responsable for all cards pertaining to their groups whether submitted by their collaborators or by themselves. For certain major groups (Leguminosae, Palmae, Bacteria) divisional editors are still required.

It should be realised that not all botanists listed below will be in a position to give immediate attention to their share of work in this enterprise. Texts prepared by them cannot always be expected to appear in the first sets of cards.

Andrews, H. N., St Louis Mo. (*Fossil plant genera,* div. ed.)
Bakhuizen van den Brink, R., Jr., Leiden (*Malaysian area,* div. ed.)
Ballard, F., Kew (*Pteridophyta*)
Blakelock, R. A., Kew (*Celastraceae, Hippocrateaceae*)
Bonner, C. E. B., Genève (*Bryophyta,* div. ed.)
Bremekamp, C. E. B., Utrecht (*Acanthaceae, Pedaliaceae*)
Brenan, J. P. M., Kew (*Leguminosae,* Africa, *p.p.*)
Bruce, Miss E. A., Kew (*Loganiaceae,* Africa, *p.p*)
Bullock, A. A., Kew (*Apocynaceae* gen. ed.; *Asclepiadaceae,* Africa; reg. ed. *Dicots* tropical Africa)
Burbidge, Miss N. T., Canberra (reg. ed. *Dicots,* Australia).
Cannon, J. F. M., London (*Umbelliferae*)
Cowan, R. S., New York (*Leguminosae,* tropical America)
Cuatrecasas, J., Chicago (S. American *Bombacaceae, Brunelliaceae, Sterculiaceae* s.l., *Connaraceae, Hypericaceae*)
Dandy, J. E., London (Monocots, especially *Hydrocharitaceae, Haemodoraceae, Taccaceae, Dioscoreaceae, Roxburghiaceae, Liliaceae, Pontederiaceae, Philydraceae, Xyridaceae, Mayacaceae, Flagellariaceae, Juncaceae, Pandanaceae, Typhaceae, Lemnaceae, Triuridaceae, Helobiae*).
Demaret, F., Bruxelles (*Musci,* Africa)
Donk, M. A., Bogor (*Fungi p.p.*; joint div. ed.)
Dyer, R. A., Pretoria (reg. ed. *Dicots,* S. Africa)
Florin, R., Stockholm (*Gymnospermae,* recent)
Florschütz, P. A., Utrecht (*Musci p.p.*)
Forman, L. L., Kew (*Menispermaceae p.p.*)
Fosberg, R., Washington (*Rubiaceae, Psilotaceae,* reg. ed. *Dicots* Oceania)
Foster, R. F., Cambridge, Mass. (*Iridaceae*)
Gillett, J. B., Kew (*Leguminosae,* Africa, *p.p.*)
Hara, H., Tokyo (reg. ed. *Dicots,* Japan)
Holttum, R. E., Kew (*Orchidaceae p.p.*)
Howard, R. A., Cambridge Mass. (*Icacinaceae,* tropical American *Polygonaceae*).
Jonker, F. P., Utrecht (*Burmanniaceae, Gentianaceae, Rhizophoraceae, Scitamineae*)
Jonker-Verhoeff, Mrs A., Utrecht (*Loranthaceae*)
Keay, R. W. J., Kew (*Leguminosae* Africa, *p.p.*)
Keck, D. D., New York (*Compositae,* div. ed.)

Kobuski, C. E., Cambridge Mass. (*Theaceae*, reg. ed. *Dicots* China)
Lam, H. J., Leiden (Asiatic *Burseraceae* & *Sapotaceae*)
Lanjouw, J., Utrecht (S. American *Moraceae*; *Aublet* genera)
Lawrence, G. H. M., Ithaca N.Y. (*Plumbaginaceae*)
Leenhouts, P., Leiden (Asiatic *Burseraceae*)
Maguire, B., New York (*Rapateaceae*, New World *Clusiaceae* & *Rosaceae-Chrysobalinideae*)
Margadant, W., Groningen (*Musci p.p.*)
Martin, G. W., Iowa City (*Fungi p.p.*; joint div. ed.)
McVaugh, R., Ann Arbor (S. American *Lecythidaceae* & *Myrtaceae*)
Meikle, R. D., Kew (miscellaneous European genera of *Dicots*)
Melderis, A., London (*Gramineae* p.p.)
Melville, R., Kew (*Myrtaceae p.p.*)
Meyer, F. G., St Louis (*Valerianaceae*)
Milne Redhead, E., Kew (*Leguminosae* Africa *p.p.*)
Moldenke, H. N., Yonkers N.Y. (*Verbenaceae, Avicenniaceae, Symphoremaceae, Stilbaceae, Eriocaulaceae*)
Monachino, J., New York (New World *Sapotaceae, Apocynaceae & Asclepiadaceae*)
Moore, H. E., Ithaca N.Y. (*Palmae* p.p.)
Nannfeldt, J. A., Uppsala (*Fungi* p.p.)
Nelmes, E., Kew (African *Cyperaceae*)
Ooststroom, S. J. van, Leiden (*Convolvulaceae, Cuscutaceae*)
Papenfuss, G., Berkeley Cal. (*Algae*, div. ed.)
Pichi Sermolli, R. E. G., Florence (*Pteridophyta*, div. ed.; *Palmae-Arecoideae*)
Robyns, W., Bruxelles (African *Gramineae*, p.p.)
Rollins, R. C., Cambridge Mass. (*Cruciferae*; reg. ed. N. America)
Roon, A. C. de, Utrecht (*Marcgraviaceae*)
Ross, R., London (*Diatomeae*)
Rothmaler, W., Greifswald (reg. ed. *Dicots* Europe)
Sandwith, N. Y., Kew (*Bignoniaceae* p.p.)
Santesson, R., Uppsala (*Lichenes*, div. ed.)
Schubert, Miss B. G., Beltsville Md. (*Desmodium, Droogmansia, Dioscorea*)
Sealy, J. R., Kew (*Amaryllidaceae*)
Silva, P. C., Urbana Ill. (*Algae* p.p.)
Sleumer, H., Leiden (Asiatic *Flacourtiaceae, Proteaceae, Ericaceae*)
Smith, L. B., Washington D.C. (*Bromeliaceae*)
Stafleu, F. A., Utrecht (*Vochysiaceae, Trigoniaceae, Malpighiaceae*; *Nomina generica conservanda et rejicienda* p.p.)
Stearn, W. T., London (*Myristicaceae, Martyniaceae*)
Stevenson, J., Beltsville Md., (*Fungi* p.p.)
Steyermark, J. A., Chicago (New world *Euphorbiaceae*)
Stoffers, A. L., Utrecht (West Indies, *Dicots*)
Summerhayes, V. S., Kew (*Orchidaceae*, div. ed.)
Swallen, J. R., Washington D.C. (*Gramineae*)
Swart, J. J., Utrecht (*Rutaceae*, S. Am. & Afr. *Burseraceae*)
Talbot, P. A., Pretoria (*Fungi*, Africa, p.p.)
Taylor, G., London (*Podostemaceae* Africa)
Taylor, Miss J., Kew (*Musci* p.p.)
Thieret, J. W., Chicago (*Scrophulariaceae*)
Troupin, G., Bruxelles (*Menispermaceae* p.p.)
Tryon, R., St Louis (*Pteridophyta* p.p.)
Wheeler, L. C., Los Angeles (*Euphorbiaceae* p.p.)
Wiltshire, S. P., Kew (and staff of C.M.I., Kew: *Fungi imperfecti*)
Wood, C. E., Jr., Cambridge Mass. (Temperate American *Leguminosae*)
Wood, R. D., Kingston R.I. (*Characeae*)
Wurdack, J. J., New York (New World *Melastomaceae*)

# News and Notes

## PROF. K. SUESSENGUTH †

We deeply regret to announce the sudden death on April 12th, 1955 of the distinguished German taxonomist Prof. Dr Karl Suessenguth, Director of the Botanische Staatssammlung at Munich and honorary Professor at the Munich University.

We hope to publish an obituary of Prof. Suessenguth in one of the forthcoming issues of Taxon.

## PROF. G. J. SHIRIAEV †

On June 18th, 1954 Prof. G. J. Shiriaev (= Širjaev = Chirjaev) well known as the monographer on various Old World papilionaceous genera, such as Onobrychis, Trigonella, Ononis, died in New York City at the age of seventy two. He was born on January 24th, 1882 at Charkow in the Ukraine, Russia where he passed the days of his childhood and youth. In the years 1902-1903 he studied

at the University of Lausanne, Switzerland, spending much time at the Boissier Herbarium at Geneva. He graduated as Magister of Botany at Charkow in 1907 and in the same year was appointed assistant at the Botanical Institute of the University of Charkov. He served as officer in the czaristic army in World War I. Then he returned home, but he was again called to arms in 1919, this time to the army of General Denikin, which he left in 1920 for Gallipoli. From there he went to Tirnovo in Bulgaria.

In 1922 he settled down in Brno, Czechoslovakia, where he made his second home. He was appointed temporary assistant to the Herbarium of the Masaryk University; later on he became Assistant Professor of Botany. His most important taxonomical works were written in Brno.

At the end of World War II, Shiriaev decided to leave Czechoslovakia. After some years in camps for Displaced Persons in Germany, he emigrated to the United States of America in 1951. Being nearly seventy years of age he found it difficult to get a suitable post. This was partly due to his great modesty, partly to the fact that all his papers dealt with the flora of the Old World; therefore his name was little known in the USA. Several attempts to help Shiriaev failed because of the insurmountable barriers of red tape. After short stays at the Missouri Botanical Garden, St. Louis, and at the Gray Herbarium of Harvard University, Cambridge, Massachusetts, and after having worked as a gardener, door keeper, stoker, he settled down in New York, working on night shifts in a match factory. In his spare time on Sundays he worked at the New York Botanical Garden Herbarium, studying mainly the Oriental species of Astragalus.

Shiriaev's taxonomic papers are of basic importance; their style is extremely accurate and clear. The conclusions he reached from the synthesis of morphological comparison with the facts of geographical distribution are well founded and have far reaching implications. The results of his studies have been to help us to a better understanding of the evolution of the flora in the Mediterranean and the Near and Middle East. It is a great pity that Shiriaev was not able to complete his revision of the Old World's species of the giant genus Astragalus. A large part of the manuscript notes he left were lost on the way from New York to Vienna. I do hope that at least a few of the sketches of keys to some of the major sections of Astragalus can still be completed and published. Shiriaev's main taxonomic papers are as follows: Onobrychis (1925-1937), Trigonella (1928-1934), Ononis (1932), and Astragalus Subgen. Tragacantha (1939) and Subgen. Trimeniaeus (1944).

A full obituary notice with a complete list of publications will be published in Phyton 6, 1 (1955).

K. H. Rechinger, Vienna.

## CALL FOR PALEOBOTANICAL PROPOSALS

It is again brought to the attention of paleobotanists that the Committee for Paleobotanical Nomenclature was reconstituted at the Paris Congress and now consists of the following persons:

C. A. Arnold, Chairman, Botany Department, University of Michigan, Ann Arbor, Michigan, U.S.A.

S. H. Mamay, Secretary, U.S. Geological Survey, 338 U.S. National Museum, Washington 25, D.C., U.S.A.

H. N. Andrews, Botany Department, Washington University, St. Louis, Missouri, U.S.A.

Ed. Boureau, Sous-Directeur au Muséum, 61, rue de Buffon, Paris 5e, France.

T. M. Harris, Department of Botany, The University, Reading, England.

Theodor Just, Department of Botany, Chicago Natural History Museum, Chicago, Illinois, U.S.A.

R. Potonié, Amt für Bodenforschung, Krefeld, Westwall 124, Germany.

W. N. Radforth, Department of Botany, McMaster University, Hamilton, Ontario, Canada.

J. M. Schopf, U.S. Coal Geology Laboratory, Orton Hall, Ohio State University, Columbus, Ohio, U.S.A.

F. Stockmans, Musée Royale d'Histoire Naturelle de Belgique, Rue Vautier 31, Brussels 4, Belgium.

K. R. Surange, Birbal Sahni Institute of Paleobotany, Lucknow, India.

H. Weyland, Wuppertal-Elberfeld, Nüllerstrasse 139, Germany.

Paleobotanists who wish to make formal nomenclatural proposals are invited to submit these to any of the above-named persons. It is requested, however, that these be submitted in final form as soon as possible — and preferably not later than January, 1957 —

so that the Committee Members will have sufficient time to discuss the proposals among themselves and arrive at a carefully conceived set of recommendations before the Montreal Congress convenes in 1959.

Although two major points were formally acted upon during the Paris Congress (acceptance of December 31, 1820 as the valid starting date for paleobotanical nomenclature, and formal conservation of certain generic names), there still remain several fundamental problems for critical consideration. As brought before our attention by Dr. H. Hamshaw Thomas, retiring Secretary of the Paleobotanical Committee, these include:

1. *Typification of fossil plant names:* It is suggested that further consideration be given to Articles 18, 19, and PB4, for it is possible that some modifications or additions are desirable. In many instances the specimens on which fossil plant names were based cannot now be found; or where one or two specimens exist they do not show all the distinguishing characters. Similar situations may exist where a holotype has been cut into a number of slides and distributed among several different repositories. How should the paleobotanist deal with this particular type of problem? (Note: In regard to problems of typification, Dr. Thomas has pointed out to us that at early meetings of the Paleobotanical Committee it was considered that the type method could not logically be applied to artificial, or form-genera.)

2. *Names of fossil plants derived from the organs of living plants:* Questions have been raised regarding the fixity of names given to specimens of fossil wood. Some of these names, such as *Cedroxylon or Dipterocarpoxylon* may eventually prove to have been based on specimens which were not in fact of *Cedrus* or *Dipterocarpus* but of other genera. Can a scheme be devised whereby it is possible to avoid the perpetual use of such incorrect or misleading names?

3. *Names to be used when species belonging to different organ genera are united:* Although much discussion has been devoted to this problem it is still unsettled. It is now all the more important because of the great development of activity in palynological nomenclature and the possibility that many of the recently named palynological entities may later be found within the sporangia of the parent plants.

4. *Names of fossil dispersed spores and pollen grains:* See proposal B (176) by Professor Potonié in Recueil Synoptique, Paris, 1954, p. 115.

There are doubtless other sorts of paleobotanical nomenclatural problems waiting for formal resolution, and the Committee will, of course, be happy to assist with any that are brought forth. But it is urged that the subjects itemized above be given serious thought, for they are obviously of a basic nature and their formal resolution will unquestionably expedite the solution of more minor questions in the future.

## NOMINA GENERICA CONSERVANDA PROPOSITA

Mr W. T. Stearn (British Museum, Natural History) has kindly pointed out to me that the Introduction in Rafinesque's *Sylva Telluriana* is dated October 1838 (on p. 7), and that the various *Centuriae* and the Appendix of this work must have been printed at the same time as or later than the Introduction, so that no new genera or species described in the *Sylva Telluriana* could have been published earlier than October 1838. This being so, my proposals numbered (1), (4) and (6), in *Taxon* 4 (2) : 43-46 . 1955, for the conservation of the generic names 7662, *Arrabidaea* DC., 7732, *Tabebuia* Gomes ex DC., and 7761, *Kigelia* DC., all published in September 1838, against various generic names of Rafinesque published in the *Sylva Telluriana,* are unnecessary, and I withdraw them.

N. Y. Sandwith (Kew)

## INDEX FILICUM

The following resolution was accepted by the VIIIth International Botanical Congress, Paris, July 1954:

"The members of the Taxonomy section of the VIIIth International Botanical Congress call the attention of the I.A.P.T. to the urgent importance of publishing a continuation of C. Christensen's Index Filicum and request the cooperation of the I.A.P.T. to achieve this end. They suggest that the other groups of Pteridophytes should also be included in the supplement".

Further information on the action taken by the I.A.P.T. in connection with this resolution will be published in future issues of Taxon.

## MUSTARD OIL ANALYSES

The pungent principle of mustard belongs to the chemical class of isothiocyanates, of which fifteen representatives are known to occur in plants. Determination of the kind and amount of isothiocyanate in a plant (Kjaer *et al.*, 1953) affords a valuable *biochemical character* for taxonomy. The Robert Welch Foundation has granted ample funds for investigation during a three year period, September 1955 to 1958, of the botanical distribution of mustard oils.

Since the study intends as broad a survey as possible of *wild* as well as cultivated plants, *the cooperation of all botanists to furnish samples is eagerly solicited and will be gratefully appreciated.* The presence of a mustard oil may often be detected by taste, but all members or close relatives of families in part known to contain isothiocyanates are desired, even if apparently not pungent, for exact analysis. The families of particular interest include *Cruciferae, Capparidaceae, Resedaceae, Moringaceae, Tovariaceae, Tropaeolaceae, Limnanthaceae, Caricaceae, Salvadoraceae, Phytolaccaceae, Achatocarpaceae, Gyrostemonaceae* and *Euphorbiaceae.*

The samples for analysis most easily preserved are seeds, mature or well dried, not necessarily separated from the pod or fruit. Amounts of 2—3 g. (1/10 oz.) suffice for preliminary analysis, though study is facilitated by quantities up to 10 g. (1/3 oz.). Specimens, accompanied by a herbaceous part suitable for identification, may be sent to Dr Martin G. Ettlinger, Department of Chemistry, The William M. Rice Institute, P. O. Box 1892, Houston 1, Texas, U. S. A.

## CONSPECTUS MUSCORUM EUROPAEORUM

Das Buch des Akademikers Josef Podpěra der im bryologischen Schrifttum als Monograph der schwierigen Gattung *Bryum* bekannt ist, erscheint erst nach dem Tode des Verfassers. Den Anlass zur Verfassung dieses Werkes gaben die Austauschmeinungen in der bryologischen Sektion des V. internationalen botanischen Kongresses in Cambridge 1930, an dem die Notwendigkeit eines "Index bryologicus" besprochen wurde.

Ein solches Werk, das ein Verzeichnis der europaeischen Laubmoose darstellt, ist nun unter dem Titel *"Conspectus muscorum europaeorum"* von Professor J. Podpěra im Verlage der Tschechoslowakischen Akademie der Wissenschaften in Prag im Umfange von 700 Seiten erschienen. Dieses in Latein geschriebene Buch wird den bekannten *"Index bryologicus"* von E. G. Paris, dessen 2. Ausgabe vor 50 Jahren erschien, ergänzen und ersetzen; jedoch werden nur die europaeischen Laubmoose behandelt, und nicht nur die Arten, sondern auch die niederen Einheiten wie Unterarten, Varietäten, Formen usw.

Dem tschechischen und lateinischen Vorwort des Verfassers folgt eine Uebersicht von Abkürzungen, periodischen Zeitschriften, geographischen Namen, wichtigsten Begriffen und ein Verzeichnis von grundlegenden bryologischen Arbeiten. Der *Conspectus muscorum europaeorum* ist nach der Gruppierung von Brotherus und Fleischer geordnet. Bei jedem Taxon sind angeführt der gültige Name, die Synonymik, die Literaturquellen und die Uebersicht der niederen taxonomischen Einheiten. Jeder gültige Artenname ist versehen mit dem Namen des Autors und dem Zitat der Originalarbeit, mit allen Synonymen, Literaturquellen, mit Angabe der geographischen Verbreitung / auch ausser Europa / und mit den Bemerkungen des Verfassers.

Besonders den niederen Taxonen hat Podpěra eine grosse Aufmerksamkeit gewidmet, wobei er die zerstreuten und schwer zugänglichen bryologischen Arbeiten berücksichtigt hat. Diese niederen taxonomischen Einheiten wurden auch von Podpěra geschätzt und danach verschiedenartig umgereiht. Die Vollständigkeit der niederen taxonomischen Einheiten ist fast vollkommen. Laut dem *Conspectus* wachsen in Europa 1071 Arten.

Bemerkenswert ist die Bearbeitung der Gattung *Bryum*, da Podpěra ein grosses Werk *"Bryum generis monographiae Prodromus"* vorbereitete. Bekanntlich ist nur ein kleiner Teil dieser Bearbeitung erschienen, sodass die Gattung *Bryum* im *Conspectus* einen kurzen Auszug aus der vorbereiteten Monographie darstellt. Von den zahlreichen, aus Europa angeführten *Bryum*-Arten wurden von Podpěra nur 75 anerkannt, darunter 140 Unterarten.

Die Bearbeitung des *Conspectus* entspricht den Forderungen, die weiland H. N. Dixon in dem bekannten Artikel in *Annales Mycologici* 9 : 1 (1936) "On a new Index Bryologicus" aufstellte, die auch in dieser Zeitschrift (*Taxon* 3 (4) : 97) nochmals erörtert wurden. Für jeden, der sich mit der Bryologie beschäftigt, wird der *Conspectus* ein

nützliches Hilfsbuch sein, das eine schnelle Orientierung ermöglicht, besonders was die Frage der schon beschriebenen taxonomischen Einheiten der Laubmoose und der schon vergebenen Namensbezeichnungen anbelangt. B. Fott, Praha.

### *Office*

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### TAXON

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